How-to / info: NEC Powermate 386 BIOS setup utility <./viewtopic.php?t=77316>

First post, by InbetweenDays

Posted on 2020-10-26, 15:11 <./viewtopic.php?p=905723#p905723>

Disclaimer: This information is based on my experience setting up an NEC Powermate 386/33i. It probably also works with other Powermate 386 systems, but anything you do is at your own risk and I take no responsibility for any damage you cause following any of the information in this post.

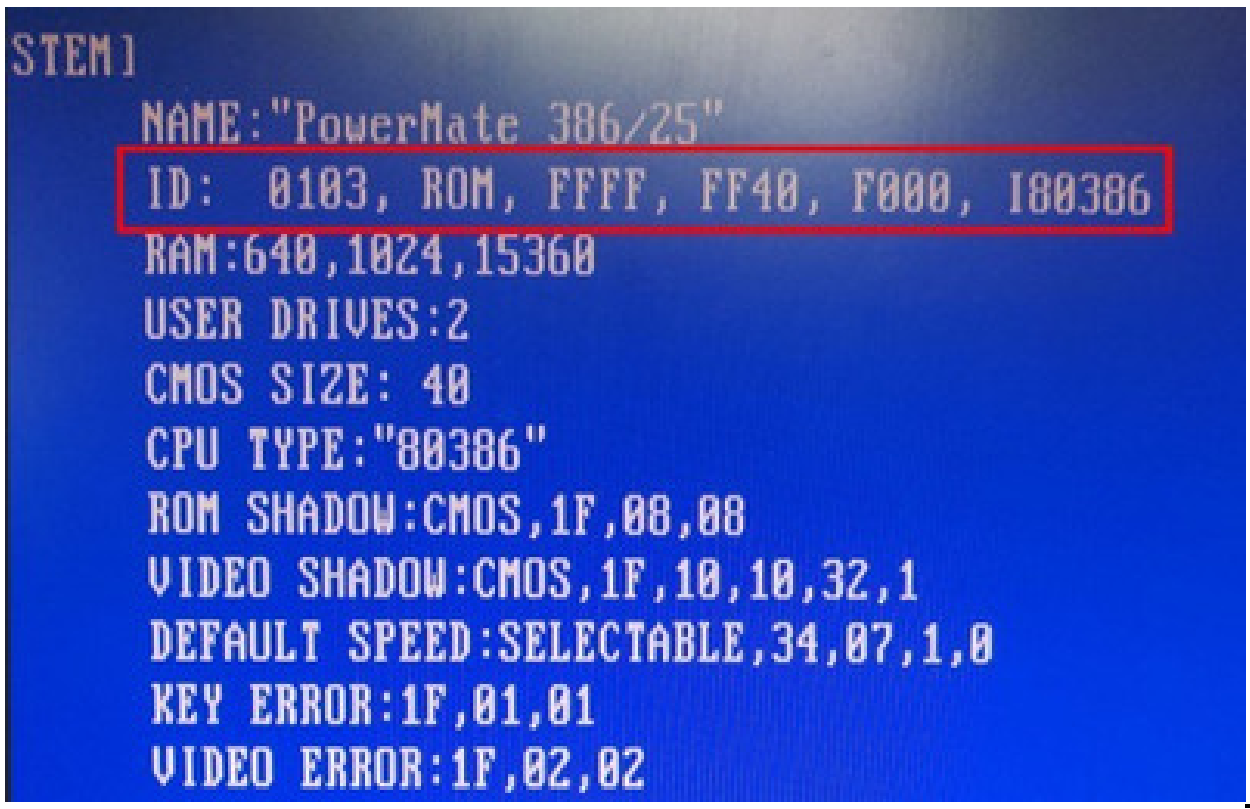
When it comes to BIOS setup, the NEC Powermate 386 is a right pain in the #%&^!
You'll find webpages telling you the BIOS setup key is F2, but then there's no boot message saying press F2, and pressing it repeatedly doesn't work. 😕
Then you find out you need NEC's special setup program... but the NEC FTP site is long gone and all you can find is the setup for the SX/16 on minuszerodegrees.net. 😕
That setup gives you an error ("unknown system hardware") but it DOES at least let you set some basic parameters (so does gsetup). But you're sure there must be more... 😒
You're lucky enough to find mR_Slug's dump of ftp.necam.com on archive.org, and after downloading 7GB, you discover that HS386_33 is only for the 386/33E (EISA) not the 33i... 🤦 😠

I'm here to (hopefully) spare a future someone the same pain I went through 😁

Firstly:
If you have an old NEC Powermate (286, 386, 486, Portable Plus, etc) and need some files from the Old.Powermate section of the ftp.necam.com site, I've made a zip of them which is now on vogonsdrivers here <http://www.vogonsdrivers.com/getfile.php?fileid=1744&menustate=0>. If you have the 386/33i, see attached for a version of the setup utility that will work, but make sure you read the rest of this post too (and the disclaimer above!)
If you can't even boot from a floppy drive and desperately need that F2 setup, please see "Other useful information" below.

The info you need is actually really simple:

The Powermate 386 series (and 486SX) all used a similar setup program and config file (setup.cnf) that grew over time to include more options for each model (SX16, SX20, 20C, 25, etc). So you want to choose an appropriate setup utility that supports the options you need to be able to configure... eg, try the next model up, but be aware there will probably be options that are NOT appropriate and don't apply to your system. (More on that in a moment).
As mentioned above, you'll get an error about "unknown system hardware". *All you need to do is change the ID in the setup.cnf file:*



<./download/file.php?id=94866&mode=view>

Filename

SETUP_CNF.jpg <./download/file.php?id=94866&mode=view>

File size

61.49 KiB

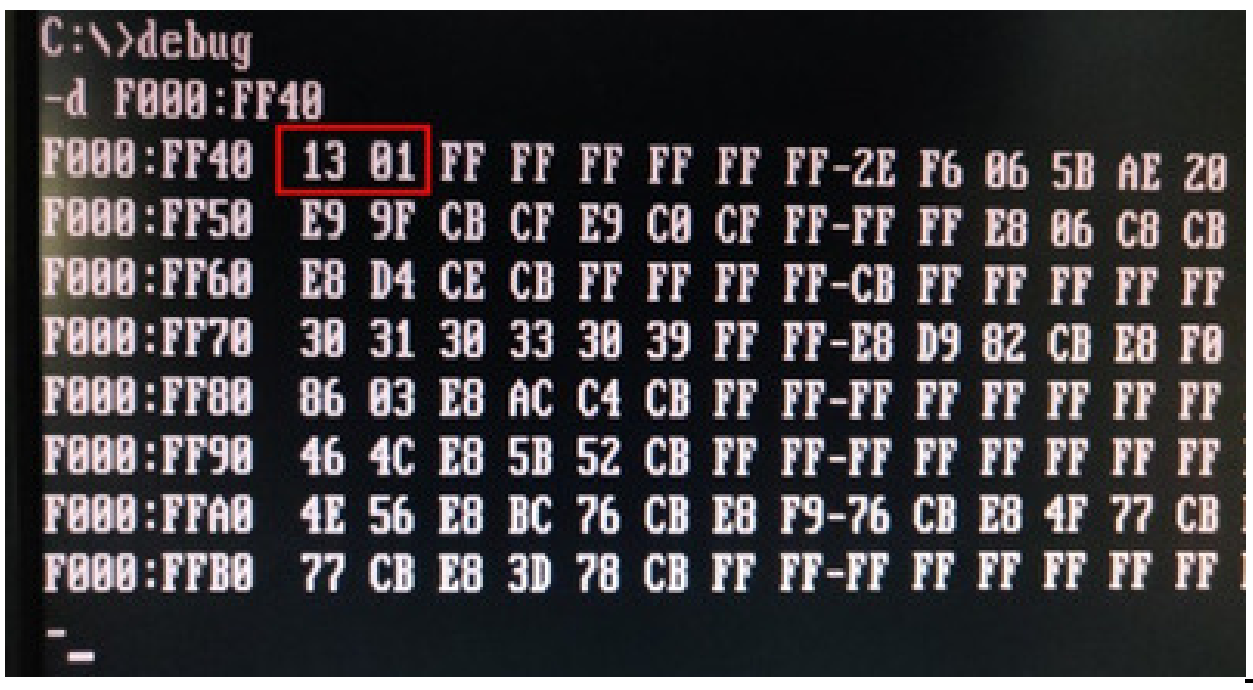
Views

2741 views

File license

Public domain

Fortunately that line tells us where to find the correct ID. It's in the BIOS at FF40, and you can find it using the debug command -d F000:FF40


C:\>debug
-d F000:FF40
F000:FF40 13 01 FF FF FF FF FF FF-2E F6 06 5B AE 20
F000:FF50 E9 9F CB CF E9 C0 CF FF-FF FF E8 06 C8 CB
F000:FF60 E8 D4 CE CB FF FF FF FF-CB FF FF FF FF FF
F000:FF70 30 31 30 33 30 39 FF FF-E8 D9 82 CB E8 F0
F000:FF80 86 03 E8 AC C4 CB FF FF-FF FF FF FF FF FF
F000:FF90 46 4C E8 5B 52 CB FF FF-FF FF FF FF FF FF
F000:FFA0 4E 56 E8 BC 76 CB E8 F9-76 CB E8 4F 77 CB
F000:FFB0 77 CB E8 3D 78 CB FF FF-FF FF FF FF FF FF
-_
<./download/file.php?id=94867&mode=view>

Filename

DEBUG.jpg <./download/file.php?id=94867&mode=view>

File size

77.18 KiB

Views

2741 views

File license

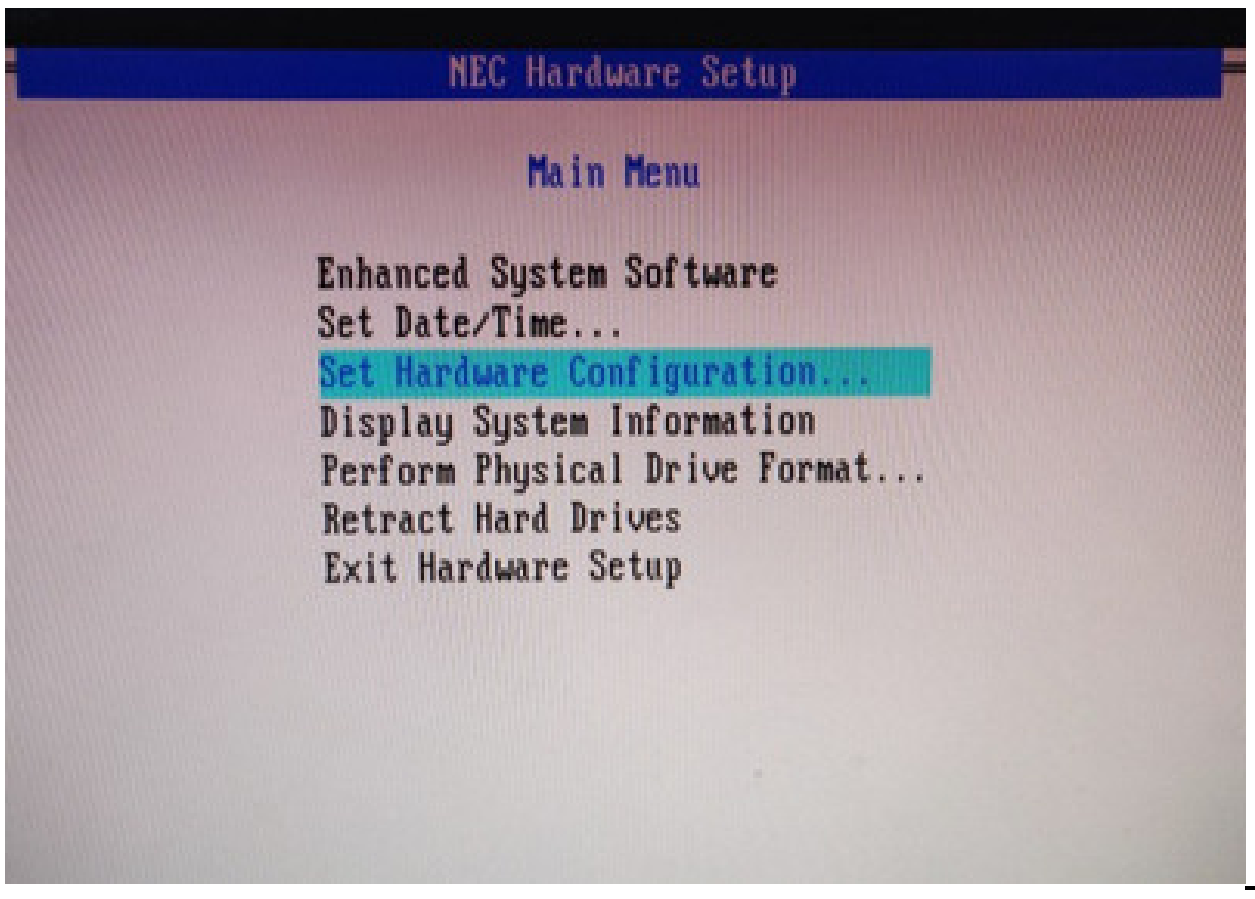
Public domain

Take those two bytes and swap them around - so for the 386/33i the ID you need is 0113. Put that into the setup.cnf file and voila! The setup utility will work without complaint... and will happily let you attempt to apply all those other options to your system and utterly destroy it. 😀 😢
Just kidding (well mostly anyway)! Aside from one remaining issue I didn't have any major problems, but there's no telling what may or may not happen, so again please use this at your own risk!
You will however be able to do things like enter your own hard drive geometry, set numlock on boot, set the keyboard repeat rate, etc.

Other useful information:

Setup utility version

I ended up using the setup utility from the 486SX, with (I think) a hybrid setup.cnf derived from the SX20C and the 486SX. The setup program for the SX20C is probably the safer option but it only let me go to a value of 1023 cylinders for the hard drive. The 486SX setup let me go to 1024 which worked (fdisk reported the hard drive as 504MB), and 1060 which didn't (fdisk reported 17MB).
The SX20C version does have a menu item for "Display system information" whereas the 486SX version doesn't... however it doesn't really show anything useful anyway.



<./download/file.php?id=94869&mode=view>

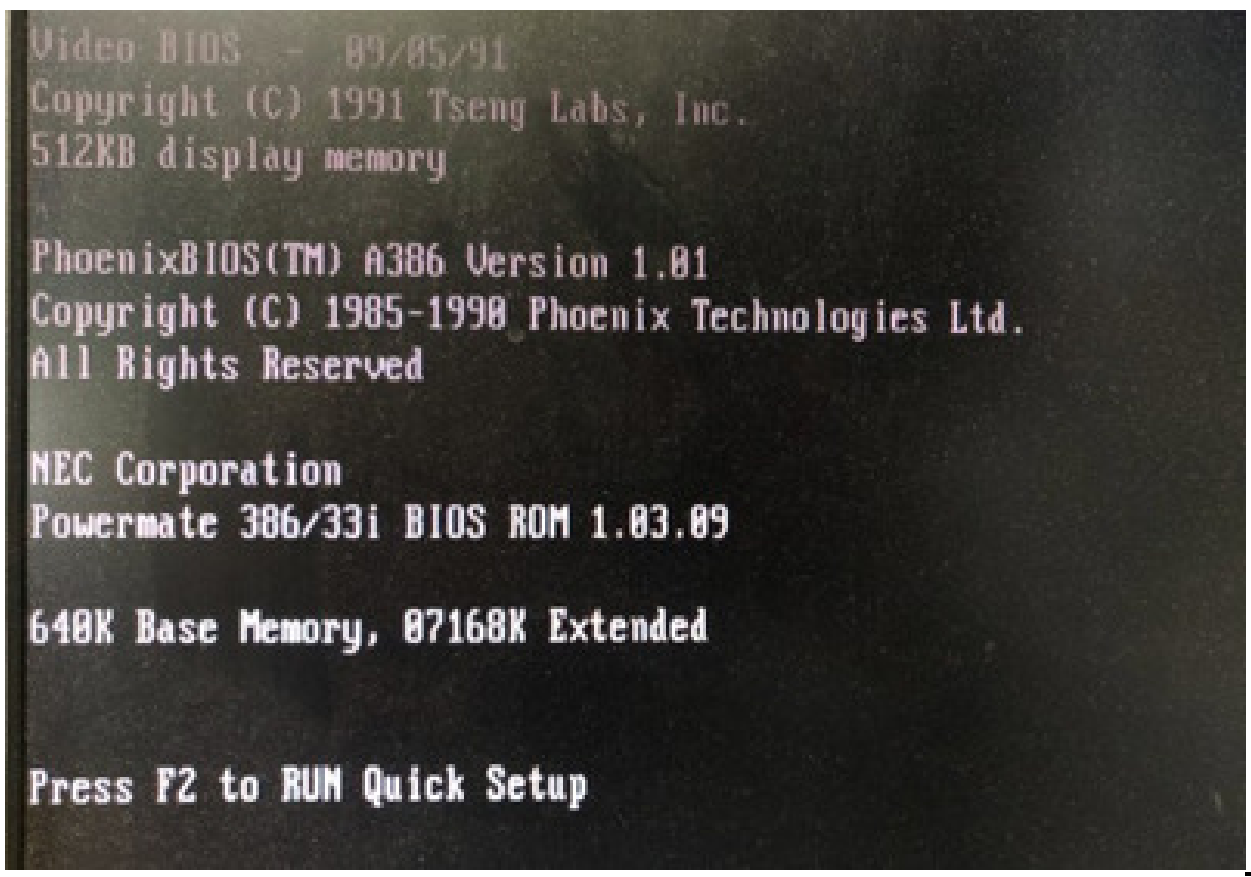
Filename
SETUP.jpg <./download/file.php?id=94869&mode=view>
File size
59.86 KiB
Views
2741 views
File license
Public domain

BIOS Password

Older setups wouldn't let me enter a BIOS password, and complained about the jumper/switch setting even though it was correct. The 486 setup worked, and I think the SX20C one did too once I added the correct line to the setup.cnf (which is UNLOCK EXT PORT). Caution: You can only enter one password, and the setup utility doesn't let you change or clear it. However I booted with the password disabled (SW3 ON), then password enabled (SW3 OFF) and that cleared it.

F2 and Initial Setup

The setup utility will allow you to enable F2 at boot (I think the setup.cnf line is this one: ENABLEROMSETUP:44,80,80,00). Then you can have this:


Video BIOS - 09/05/91
Copyright (C) 1991 Tseng Labs, Inc.
512KB display memory
PhoenixBIOS(TM) A386 Version 1.01
Copyright (C) 1985-1990 Phoenix Technologies Ltd.
All Rights Reserved
NEC Corporation
Powermate 386/33i BIOS ROM 1.03.09
640K Base Memory, 07168K Extended
Press F2 to RUN Quick Setup
<./download/file.php?id=94868&mode=view>

Filename

PM_BIOS.jpg <./download/file.php?id=94868&mode=view>

File size

68.6 KiB

Views

2741 views

File license

Public domain

But what if you can't even boot to be able to use the setup utility?
Assuming your system works and is bootable but just needs the quick setup - remove the battery and disconnect the drive cables. The system should then give an error and let you press F2 for quick setup.

User type hard drives

The USER DRIVES line in setup.cnf (eg USER DRIVES:1) specifies the number of user type drives you can use. Presumably the value should be 1 or 2. I only tried setting my machine up with one hard drive as master, so I don't know whether the 386/33i will support 2 custom types or not. I left the value as 1.

System name

The NAME line in setup.cnf can say anything and only appears to be used in two places: In "Display System Information" (SX20C setup.exe; see above) and when selecting the video type (IIRC)

Disk types

I haven't looked at these properly, so they are most likely wrong in my setup.cnf file. Select from the list of BIOS types, or enter your own geometry.

Help! Alt-Ctrl-Del beeps and crashes the machine

This is caused by EMM386 -- you will need to add the ALTBOOT parameter.

I can't activate / deactivate turbo mode...
Me either. 😕 See my other post... and let me know if you figure it out! 👍

Hope this helps someone sometime! 😁

Attachments

- Filename
  Powermate 386 33i Utilities.zip <./download/file.php?id=94870>
  File size
  127.32 KiB
  Downloads
  164 downloads
  File license
  Public domain

Last edited by InbetweenDays <./memberlist.php?mode=viewprofile&u=36979> on 2021-12-06, 07:42. Edited 1 time in total.

Reply 1 of 8, by ArcadEd

Posted on 2021-12-06, 05:33 <./viewtopic.php?p=1023524#p1023524>

I recently picked up an "untested" NEC Powermate SX/20.
Thank you for the utilities.
I'm able to run the setup from a floppy. Does it write the info to the bios?

Is there a battery in these systems to remember the bios info? Every time I boot up I get a system configuration error and press F1 to continue.

The installed HDD might also be dead. As the setup program says it's missing and so does the DOS setup. I may just need to manually configure it.

Reply 2 of 8, by InbetweenDays

Posted on 2021-12-06, 07:41 <./viewtopic.php?p=1023535#p1023535>

Yes, there should be a header for an external battery between the keyboard port and ISA slot.
You could also get a configuration error if something wasn't set properly - eg saying there's a coprocessor when there isn't, or vice versa.
I assume you used the SX/20 utility from the Old.Powermate archive?
On the 33i, I did need to make sure the IDE port was enabled in the BIOS too.

Reply 3 of 8, by ArcadEd

Posted on 2021-12-06, 14:10 <./viewtopic.php?p=1023584#p1023584>

> *InbetweenDays <./memberlist.php?mode=viewprofile&u=36979> wrote on 2021-12-06, 07:41: <./viewtopic.php?p=1023535#p1023535>*
>
> ▶ Yes, there should be a header for an external battery between the keyboard port and ISA slot. You could also get a configuratio […]
> Show full quote

I wasn't aware of the setup utility on the archive, I'll check it out.

On this model the keyboard port is in the front, but there is a Dallas Real Time Clock chip, I assume that is the battery as well?

I was able to find the setup for the SX/16 which might be close. The ftp with the old.powermate doesn't seem to be active anymore. Is there another URL for the old.powermate?

Thanks.

Reply 4 of 8, by InbetweenDays

Posted on 2021-12-06, 14:51 <./viewtopic.php?p=1023593#p1023593>

Sorry my bad re the keyboard port. I was misremembering.
Yes if it has a Dallas RTC that has the battery, and you can do the common mod to attach a CR2032 holder rather than replacing it.

For the archive, see the link to vogonsdrivers in my first post above .

Reply 5 of 8, by ArcadEd

Posted on 2021-12-06, 17:23 <./viewtopic.php?p=1023631#p1023631>

> *InbetweenDays <./memberlist.php?mode=viewprofile&u=36979> wrote on 2021-12-06, 14:51: <./viewtopic.php?p=1023593#p1023593>*
>
> Sorry my bad re the keyboard port. I was misremembering.
> Yes if it has a Dallas RTC that has the battery, and you can do the common mod to attach a CR2032 holder rather than replacing it.
>
> For the archive, see the link to vogonsdrivers in my first post above .

Nice. Yeah I had done the CR2032 mod this morning and now all the settings are staying. I got the system up and running.

Thanks for the help and links! Fresh install of Dos 6.22 on the 40MB hard drive. Let's go!! 😀

Reply 6 of 8, by InbetweenDays

Posted on 2021-12-06, 22:38 <./viewtopic.php?p=1023698#p1023698>

Good stuff, well done!

Reply 7 of 8, by 386_junkie

Posted on 2024-02-01, 10:21 <./viewtopic.php?p=1230784#p1230784>

> *InbetweenDays <./memberlist.php?mode=viewprofile&u=36979> wrote on 2020-10-26, 15:11: <./viewtopic.php?p=905723#p905723>*
>
> ▶ Disclaimer: This information is based on my experience setting up an NEC Powermate 386/33i. It probably also works with other Po […]
> Show full quote

Thank you, thank you, thank you... if you didn't save and upload mR_Slug's ftp.necam dump, and ID that HS386_33 is for the 386/33E EISA bus system... I would have only a very big (and heavy!) paperweight.

Seriously, I owe you one!

Reply 8 of 8, by InbetweenDays

Posted on 2024-02-01, 13:32 <./viewtopic.php?p=1230814#p1230814>

> *386_junkie <./memberlist.php?mode=viewprofile&u=28965> wrote on 2024-02-01, 10:21: <./viewtopic.php?p=1230784#p1230784>*
>
> Thank you, thank you, thank you... if you didn't save and upload mR_Slug's ftp.necam dump, and ID that HS386_33 is for the 386/33E EISA bus system... I would have only a very big (and heavy!) paperweight.

Awesome 😀 👍

VOGONS site design is distributed under a CC BY-NC license <https://creativecommons.org/licenses/by-nc/4.0/>. User-generated content is distributed under our open content policy </licenses>.
© 2002–2026 vogons.org.